Claims

1. High voltage vacuum tube, in which an anode and a cathode are disposed opposite one another in a vacuumized inner space and which vacuumized inner space is enclosed by a cylindrical metal housing , the anode and/or the cathode being electrically insulated by means of an annular insulator, the annular insulator comprising a cylindrical part, and being designed arched once, humped in direction of the vacuumized inner space, comprising:

in direction of the vacuumized inner space, a sloping front area, a shortened lateral area and a raised lateral area, the arch being characterized substantially by angles α, β and γ of the raised lateral area , of the front area and of the shortened lateral area,

wherein said sloping front area of the annular insulator with anode-side design slopes toward the disc center of the annular insulator, or respectively with cathode-side design away from the disc center of the annular insulator,

wherein the angle γ between the axial direction of the annular insulator and the shortened lateral area is between 10° and 25°,

wherein the angle β of the front area to the perpendicular to the axial direction of the annular insulator is between 10° and 25°, and

wherein the angle α between the raised lateral area to the axial direction of the annular insulator is between 10° and 25°.

2. The high voltage vacuum tube according to claim 1, characterized in that the three areas each have a tangential transition radius (R1/R3) of 1 to 7 mm.

3. The high voltage vacuum tube of claim 1 wherein the annular insulator has a fourth area between the raised lateral area and the front area, sloping with respect to the perpendicular to the axial direction of the annular insulator, which fourth area points substantially perpendicularly to the axis of the annular insulator in the direction of the vacuumized inner space, and which has a tangential transition radius (R2/R3) of 1 to 7 mm to the raised lateral area as well as to the front area.

4. The high voltage vacuum tube of claim 1 wherein the raised lateral area projects into the vacuumized inner space at least twice as far as the shortened lateral area.

5. The high voltage vacuum tube of claim 1 wherein the raised lateral area has a tapering termination toward the axial direction of the annular insulator.

6. The high voltage vacuum tube of claim 1 wherein the shortened lateral area has a tapering termination toward the axial direction of the annular insulator.

7. The high voltage vacuum tube of claim 1 wherein the annular insulator is substantially comprised of an insulating ceramic material.

8. The high voltage vacuum tube of claim 7, wherein the ceramic material of the annular insulator is comprised of at least 95 % Al_2O_3.

9. The high voltage vacuum tube of claim 1 wherein the cathode comprises an electro-polished and/or mechanically polished metal cylinder on the outer wall facing the annular insulator.

10. The high voltage vacuum tube of claim 1 wherein the high voltage vacuum tube comprises a power supply device, by means of which

operational voltages of at least 200 kV are able to be applied at the insulator.

11. The high voltage vacuum tube of claim 1 wherein the high voltage vacuum tube is an X-ray tube.

12. Method of producing a high voltage vacuum tube of claim 1, characterized in that a pressing power of at least 1000 bar is used to produce the annular insulator.

13. Baggage x-raying device, comprising a device for generation of X rays, the device for generation of X rays comprising at least one power supply device by means of which operational voltages of at least 200 kV are able to be generated, and at least one X-ray tube of claim 1.

14. X-raying device for transport containers and/or transport vessels, comprising at least one X-ray tube of claim 1 for generating X rays.